TABLE OF CONTENTS

Volume 2: Guidelines Supplement

Section			Page
Acknowledements			ii
List of Figures			vi
List of Tables			vii
Acronym List			viii
1	WATER QUALITY ASSESSMENTS UNDER SECTION 305(b)		1-1
	1.1	What is an Assessment?	1-1
	1.2	Degree of Use Support	1-4
	1.3	Types of Assessment Information	1-5
	1.4	Monitored and Evaluated Waters	1-5
	1.5	Presumed Assessments	1-9
	1.6	Causes of Impairment (Pollutants and Other Stressors)	1-10
	1.7	Sources of Impairment	1-12
	1.8	Cause/Source Linkage	1-17
	1.9	Major/Moderate/Minor Contribution to Impairment	1-18
2	DESIGNING ASSESSMENTS AND MANAGING INFORMATION		2-1
	2.1	Extent of Individual Assessments	2-1
	2.2	Comprehensive Statewide Assessment	2-2
		2.2.1 General Types of Monitoring Designs	2-5
		2.2.2 Planning Process for Probability-based Sampling in a Rotating Basin Design	2-6
		2.2.3 Stratified Probability in a Rotating Basin Design	2-8
		2.2.4 Case Studies of Different Types of Monitoring Designs	2-10
		2.2.5 Improving Monitoring Designs through Modeling	2-12
	2.3	Watershed and Waterbody Delineation	2-13
	2.4	Managing Assessment Data	2-22
3	MAKING USE SUPPORT DETERMINATIONS		3-1
	3.1	ITFM Recommendations for Monitoring	3-1
	3.2	Aquatic Life Use Support (ALUS)	3-5
		3.2.1 Bioassessment	3-10
		3.2.2 Habitat Assessment	3-12
		3.2.3 Aquatic and Sediment Toxicity Methods	3-13

TABLE OF CONTENTS (continued)

Section			Page
	3.2.4	Physical/Chemical Methods	3-16
	3.2.5	Integration of Different Data Types in Making an ALUS Determination	3-21
	3.2.6	Additional Information on Biological Assessment of ALUS for Wadable Streams and Rivers	3-27
3.3		Primary Contact Recreation Use	3-33
	3.3.1	Bathing Area Closure Data	3-34
	3.3.2	Bacteria	3-34
	3.3.3	Other Parameters	3-35
	3.3.4	Special Considerations for Lakes	3-36
3.4		Fish/Shellfish Consumption Use	3-37
3.5		Drinking Water Use	3-37
	3.5.1	Prioritization and Phases of Source Water Assessment	3-38
	3.5.2	Tiered Approach for Source Water Assessments	3-39
	3.5.3	Data Sources	3-40
	3.5.4	Contaminants Used in the Assessment	3-42
	3.5.5	Data Interpretation	3-43
	3.5.6	Conclusion	3-43
4		MEASURING AND REPORTING THE BIOLOGICAL INTEGRITY INDICATOR	4-1
4.1		Voluntary Pilot Biological Integrity Indicator	4-1
4.2		Phases and Steps in Developing the Indicator	4-3
4.3		Reporting the Biological Integrity Indicator: Case Study	4-7
5		REFERENCES	5-1

TABLE OF CONTENTS (continued)

Appendix

A	Provisions of the Clean Water Act
B	Benefits of Rotating Basin Monitoring and Assessment: South Carolina
C	Water Environmental Indicators and 305(b) Reporting
D	Contaminated Sediment Assessment Methods
E	Example of Basin-Level Assessment Information: Arizona
F	305(b) Reporting for Indian Tribes
G	Definitions of Selected Source Categories
H	Data Sources for 305(b) Assessments
I	305(b) Monitoring and Assessment Design Focus Group Handouts
K	Section 106 Monitoring Guidance and Guidance for 303(d) Lists
L	Information for Determining Sources of Designated Use Impairment
M	Section 319 v. Section 314 Funding
N	Examples of 305(b) Wetlands Information
O	National Primary Drinking Water Regulations

FIGURES

Number		Page
1-1	Monitoring, assessment and 305(b) reporting as an interrelated process	1-2
1-2	Waterbody System printout summarizing assessment results for a waterbody	1-3
2-1	Comprehensive Statewide and Tribal water quality assessment	2-4
2-2	Universe of streams from which to draw a random sample	2-7
2-3	Stratification of streams into three classes	2-7
2-4a	Random selection of basins	2-9
2-4b	Random selection of streams within a basin	2-9
2-5	14-digit SCS Watersheds in Eastern North Carolina	2-17
3-1	Monitoring for different designated uses based on a combination of biological, physical, and chemical measures	3-2
3-2	Determination of ALUS using biological, chemical, toxicological, and/or habitat data	3-22

TABLES

Number		Page
1-1	Assessment Type Codes from the Waterbody System	1-6
1-2	Cause/Stressor Codes from the Waterbody System	1-11
1-3	Source Categories (with National Codes from the Waterbody System)	1-13
2-1	Approaches for Delineating Waterbodies	2-21
3-1	Hierarchy of Bioassessment Approaches for Evaluation of Aquatic Life Use Attainment Based on Resident Assemblages	3-6
3-2	Hierarchy of Habitat Assessment Approaches for Evaluation of Aquatic Life Use Attainment	3-7
3-3	Hierarchy of Toxicological Approaches and Levels for Evaluation of Aquatic Life Use Attainment	3-8
3-4	Hierarchy of Physical/chemical Data Levels for Evaluation of Aquatic Life Use Attainment	3-9
3-5	Recommended Factors for Converting Total Recoverable Metal Criteria to Dissolved Metal Criteria	3-20
3-6	Determination of ALUS Using More Than One Data Type	3-23
3-7	Assessment Framework for Determining Degree of Drinking Water Use Support	3-44
4-1	An example of laboratory results from sorting and identification of a single benthic macroinvertebrate sample	4-10
4-2	Determining the biological integrity indicator for the waterbody	4-11

ACRONYM LIST

ADEQ	Arizona Department of Environmental Quality
ADWR	Arizona Department of Water Resources
ALUS	Aquatic life use support
ASTM	American Society for Testing Materials
AWQMN	Ambient Water Quality Monitoring Network
BMP	Best management practice
BPJ	Best professional judgement
CAFO	Concentrated animal feeding operation
CCC	Criteria continuous concentration
CLPMS	Clean Lakes Program Management System
CMC	Criteria maximum concentration
CSO	Combined sewer overflows
CU	USGS watershed cataloging unit
CWA	Clean Water Act
CZARA	Coastal Zone Act Reauthorization Amendments
DNREC	Delaware Department of Natural Resources and Environmental Conservation
DLG	Digital line graph (database)
DO	Dissolved oxygen
DOE	Washington State Department of Ecology
DQO	Data quality objective
DWFG	305(b) Drinking Water Focus Group
EMAP	Environmental Monitoring and Assessment Program
EPA	U.S. Environmental Protection Agency
FDA	U.S. Food and Drug Administration
FIPS	Federal Information Processing Standard
FWS	U.S. Fish and Wildlife Service
GIS	Geographic information system
GPS	Global positioning satellite system
GRIS	Grants Reporting and Tracking System
HUC	Hydrologic Unit Code

ACRONYM LIST (continued)

ITFM	Intergovernmental Task Force on Monitoring Water Quality
IWI	Index of Watershed Indicators
LAN	Local Area Network
LWQA	Lake Water Quality Assessment
MCL	Maximum contaminant level
MDL	Method detection limit
NAS	National Academy of Science
NAWQA	National Ambient Water Quality Assessment Program
NBS	National Biological Service
NHD	National Hydrographic Dataset
NOAA	National Oceanic and Atmospheric Administration
NPDES	National Pollutant Discharge Elimination System
NPS	Nonpoint source
NRCS	Natural Resources Conservation Service
NSTP	NOAA's National Status and Trends Program
NWQMC	National Water Quality Monitoring Council (formerly ITFM)
OGWDW	Office of Ground Water and Drinking Water
OPPE	EPA Office of Policy, Planning, and Evaluation
ORD	EPA Office of Research and Development
OST	Office of Science and Technology
OW	EPA Office of Water
OWM	EPA Office of Wastewater Management
OWOW	EPA Office of Wetlands, Oceans, and Watersheds
PACE	Annual Census Bureau Survey of Pollution Abatement Costs and Expenditures
PCB	Polychlorinated biphenyl
PCS	EPA Permit Compliance System
POTW	Publicly owned treatment works
PPA	Performance Partnership Agreements
PS	Point source
PSP	Paralytic shellfish poisoning
PWS	Public water supply

ACRONYM LIST (continued)

QA	Quality assurance
QC	Quality control
RBP	Rapid bioassessment protocol
REMAP	Regional Environmental Monitoring and Assessment Program
RF3	EPA Reach File Version 3
RTI	Research Triangle Institute
SCRF1	Waterbody System Screenfile 1
SCS	Soil Conservation Service
SDWA	Safe Drinking Water Act
SOC	Semi-volatile organic compound
SOP	Standard operating procedure
STORET	EPA STOrage and RETrieval system
TDS	Total dissolved solids
TMDL	Total maximum daily load
TVA	Tennessee Valley Authority
UAA	Use attainability analysis
USACE	U.S. Army Corps of Engineers
USDA	U.S. Department of Agriculture
USFWS	U.S. Fish and Wildlife Service
USGS	U.S. Geological Survey
VOC	Volatile organic compound
WBS	EPA Waterbody System
WQC	Water quality criteria
WET	Whole effluent toxicity
WLA	Waste load allocation
WQL	Water quality limited
WQS	Water quality standard
WRC	Water Resource Council